Dusty Rose Miller, Ph.D.

Experimentalist and Molecular Biologist

☎ (707) 813-1434 • ✉ dustyrosemiller@gmail.com

Qualifications summary

Technical expertise: Chromatography, electrochemistry, spectroscopy, microscopy, cell culture, quartz crystal microbalance, surface forces apparatus

Computer expertise: Linux, Windows, Prism, Origin Lab, LaTeX, Illustrator, Photoshop

Administrative expertise: Communications, supplies, maintenance, training

Education

Ph.D. in Molecular Biology and Biochemistry **2010–2015**
University of California, Santa Barbara
Principal investigator: Professor J. Herbert Waite
Committee members: Professors Jacob Israelachvili and Alison Butler

Bachelor of Science in Immunology and Microbiology **2004–2008**
University of California, Irvine
Magna cum laude

Research experience

Postdoctoral Research Scholar **2016–current**
Vanderbilt University, Chemistry Department

Principal investigator: Professor David Cliffel

Research Focus: Multianalyte microphysiometry, electrochemistry, toxicology

Intellectual neighborhoods: Biochemistry, regenerative medicine, nano science and engineering

Graduate Student Researcher **2010–2015**
University of California, Santa Barbara
Biomolecular Science and Engineering Program

Principal investigator: Professor J. Herbert Waite

Research focus: Underwater adhesives, load-bearing structures, redox, friction

Intellectual neighborhoods: Biochemistry, biophysics, nano science and engineering

Undergraduate Student Researcher **2006–2008**
University of California, Irvine
Department of Biological Sciences

Principal investigator: Professor Andrea Tenner

Research focus: Innate immunity, atherosclerosis

Intellectual neighborhoods: Regenerative medicine, nano science and engineering

Publications

- Anna Nix Davis, Adam R. Travis, **Dusty R. Miller**, David Cliffel, "Multianalyte Physiological Microanalytical Devices" Annual Review of Analytical Chemistry, Vol. 10, Arriving July 2017

- Tim J. Lynch, B. Joy Erickson, **Dusty R. Miller**, Ruth R. Finkelstein, "ABI5-binding proteins (AFPs) alter transcription of ABA-induced genes via a variety of interactions with chromatin modifiers" Plant Molecular Biology, December 9th, 2016, doi:10.1007/s11103-016-0569-1

- **Dusty R. Miller**, Jamie S. Spahn and J. Herbert Waite, "The staying power of adhesion-associated antioxidant activity in *Mytilus californianus*" The Royal Society Interface, Volume 12, Issue 111, October 14, 2015, DOI: 10.1098/rsif.2015.0614

- **Dusty R. Miller**, Saurabh Das, Kuo-Ying Huang, Songi Han, Jacob N. Israelachvili and J. Herbert Waite. "Mussel coating protein-derived complex coacervates mitigate frictional surface damage" ACS Biomaterials Science and Engineering, Volume 1, Issue 11, Pages 1121-1128, October 8, 2015, DOI: 10.1021/acsbiomaterials.5b00252

- Saurabh Das, **Dusty R. Miller**, Yair Kaufman, Nadine R. Martinez Rodriguez, Alessia Pallaoro, Matthew J. Harrington, Maryte Gylys, Jacob N. Israelachvili and J. Herbert Waite. "Tough coating proteins: Subtle sequence variation modulates cohesion" Biomacromolecules, Volume 16, Issue 3, Pages 1002-1008, March 9, 2015, DOI: 10.1021/bm501893y

- Dr. Yasar Akdogan, Dr. Wei Wei, Dr. Kuo-Ying Huang, Dr. Yoshiyuki Kageyama, Eric W. Danner, **Dusty R. Miller**, Nadine R. Martinez-Rodriguez, J. Herbert Waite and Songi Han. "Intrinsic surface-drying properties of bioadhesive proteins" Angewandte Chemie, Volume 126, Issue 42, Pages 11435?11438, October 13, 2014, DOI: 10.1002/anie.201406858

- Dominic E. Fullenkamp, Devin G. Barrett, **Dusty R. Miller**, Josh W. Kurutz and Phillip B. Messersmith. "pH-dependent cross-linking of catechols through oxidation *via* Fe^{3+} and potential implications for mussel adhesion" Royal Society of Chemistry Advances, Volume 4, Issue 48, Pages 25127-25134, May 28, 2014, DOI: 10.1039/C4RA03178D

- Jing Yu, Yajing Kan, Michael Rapp, Eric Danner, Wei Wei, Saurabh Das, **Dusty R. Miller**, Yunfei Chen, J. Herbert Waite and Jacob N. Israelachvili. "Adaptive hydrophobic and hydrophilic interactions of mussel foot proteins with organic thin films" Proceeding of the National Academy of Sciences, Volume 110, Number 39, Pages 15680-15685, September 24, 2013, DOI: 10.1073/pnas.1315015110

Posters

- **Hyaluronic acid and mussel foot protein coacervate achieve concentrated delivery, wear protection, and lubrication to surfaces**
  Science of Adhesion Gordon Conference, Mount Holyoke College, MA, July 2013

- **Hyaluronic acid and mussel foot protein coacervates provide boundary lubrication and enhanced wear protection to surfaces**
  Materials Research Outreach Symposium, Santa Barbara, CA, February 2013

Oral Presentations

- **Adhesion beyond the interface: molecular adaptations of the mussel byssus to the intertidal zone**
  American Chemical Society Central Ohio Valley section, Marshall University, Huntington, WV, November 2016

- **Complex coacervates: potential role in damage mitigation of the mussel byssus**
  Chemical Society Student Seminar, University of California, Santa Barbara, CA, November 2014

- **Mussel protein and hyaluronic acid coacervate achieve concentrated delivery and provide wear protection to surfaces**
  5th International Conference on the Mechanics of Biomaterials and Tissues, Sitges, Spain, December 2013

Fellowships, Scholarships, and Awards

2013: Academic Senate Doctoral Student Travel Grant

2010: Amgen Outstanding Doctoral Student Award

Teaching Experience

Teaching assistant, Biophysical Chemistry **2010–2015**
University of California, Santa Barbara
Department of Molecular, Cellular, and Developmental Biology

Tasks: Lead 20 students in discussion section, 2 sections a week and grade.

Professor: J. Herbert Waite

Teaching assistant, Organic Chemistry **2011**
University of California, Santa Barbara
Department of Chemistry

Tasks: Lead and grade 20 students a laboratory session, 4 labs a week. Proctor and grade for the laboratory lecture (200 students) and two organic chemistry lecture sections (200 students).

Professor: Justin Russak

Organic Chemistry Tutor, Learning and Academic Resource Center **2006-2008**
University of California, Irvine
Department of Chemistry

Tasks: Lead discussion groups of 8-10 students 6 times a week.

Mentoring Experience

Research Mentor, Original independent research **2012-2015**
University of California, Santa Barbara
College of Creative Studies

Tasks: Develop research plans, oversee execution of both collaborative and independent research, review and edit presentations and papers.

Mentee: Jamie Spahn

Internship Mentor, Cooperative International Science and Engineering Internship **2014**
University of California, Santa Barbara
College of Creative Studies

Tasks: Develop research plans, oversee execution of both collaborative and independent research, review and edit presentations and papers.

Mentee: Miriam Steinmann

Research Mentor, Original independent research **2011-2014**
University of California, Santa Barbara
Department of Molecular, Cellular, and Developmental Biology

Tasks: Develop research plans, oversee execution of both collaborative and independent research, review and edit presentations and papers.

Mentee: Maryte Gylys

Program Mentor, Research Internship in Science and Engineering (RISE) **2012**
University of California, Santa Barbara
Materials Research Laboratory

Tasks: Develop research plans, oversee execution of both collaborative and independent research, review and edit presentations and papers.

Mentee: Paige Smith

Program Mentor, California Nanosystems Institute, Apprentice Researchers (AR) **2011**
University of California, Santa Barbara
Center for Science and Engineering Partnerships (CSEP)

Tasks: Introduce general laboratory techniques, develop research plans, oversee research execution, co-create and attend presentations.

Mentee: Lauren Rehbein

Languages

English: Native speaker

Spanish: Basic phrases and conversations